

# Work Order ID 63886

Thursday, November 18, 2010 9:26:27 AM

Page 1

Item ID: D4281-1

Accept

Revision ID: PRELIM

Item Name: Spacer

Setup Start

Stop

Start Date: 11/18/2010 Start Qty: 4.00

Required Date: 11/19/2010 Req'd Qty: 4.00

Cust Item ID:

Customer:

PRELIMINARY ISSUE

Reference:

Approvals: Process Plan: mf

Date: 10-11-18

Tooling:

Date:

Run Start

QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr	Revision Nbr
D4281	PA1

100

0.00



Waterjet

FLOW WATER JET

Memo

0.00

FLOW CNC Waterjet

1-Cut as per Dwg  
Dwg Rev: PA1  
Prog Rev: PA1  
2-Deburr if necessary

MATERIAL CERTIFICATION

READ UPON DELIVERY

10/11/23

10-11-18

(4)

110

0.00



QC

QC2- Inspect parts off machine FAI/FAIB

Memo

0.00

Quality Control

10-11-18

Pro →

120

0.00 - inspect to PA1



QC

QC8- Inspect parts - second check

Memo

0.00

Quality Control

Day only  
Siohler (x4)

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Page 2

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Cust Item ID:

Customer:




Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Run Start

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130  Mill Conv	Manufacture as per dwg	0.00							
Conventional Milling Machine	<b>Memo</b> 1- Face to size as per dwg 2- deburr	0.00		<i>amh 10/18/10</i>		<u>4</u>	<u>0</u>		
140  QC	QC6- Inspect dimensions to drawing	0.00		<i>B</i>		<u>4</u>	<u>10-11-19</u>		
Quality Control	<b>Memo</b>	0.00							
150  HandFinish	Chemical Conversion Coat per QSI005 4.1	0.00		<i>B</i>		<u>4</u>	<u>10-11-19</u>		
Hand Finishing	<b>Memo</b>	0.00							

**Work Order ID 63886**

Thursday, November 18, 2010 9:26:27 AM

Page 3

Item ID: D4281-1

Accept

Setup Start

Revision ID: PRELIM

Stop

Item Name: Spacer

Start Date: 11/18/2010 Start Qty: 4.00

Cust Item ID:

Required Date: 11/19/2010 Req'd Qty: 4.00

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

160

White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum

0.00



Powdercoat

Memo

0.00

Powder Coating

POWDER COAT:

Start Time: 1:00

Oven Temperature: \_\_\_\_\_

Finish Time: \_\_\_\_\_

A B 10.11.19

170

QC3- Inspect Part Finish

0.00



QC

Memo

0.00

Quality Control

M 10 11 22 4

180

Identify as per dwg &amp; Stock Location: \_\_\_\_\_

0.00



Packaging

Memo

0.00






Packaging



B 10.11.22 4


# Work Order ID 63886

Thursday, November 18, 2010 9:26:27 AM

Page 4

Item ID: D4281-1	Accept		Setup Start	
Revision ID: PRELIM			Stop	
Item Name: Spacer				
Start Date: 11/18/2010	Start Qty: 4.00		Cust Item ID:	
Required Date: 11/19/2010	Req'd Qty: 4.00		Customer:	
Reference:				

Approvals:	Process Plan:	Date:	Tooling:	Date:	Run Start	
	QC:	Date:	SPC (Y/N):	Date:	Stop	

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
190	QC21- Final Inspection - Work Order Release	0.00							
									
QC	Memo	0.00							
Quality Control									

*Rev. A. B.*  
*test. Pass PAT 10-11-23*

**POSITIVE RECALL**  
EFFECTIVE *10-11-23* AUTH *U*  
RELEASED \_\_\_\_\_ DATE \_\_\_\_\_

*MF*  
*10-11-30*

# Picklist Print

Page 1

Thursday, November 18, 2010 9:26:27 AM

Work Order ID: 63886



Parent Item: D4281-1



Parent Item Name: Spacer

Start Date: 11/18/2010

Required Date: 11/19/2010

Start Qty: 4.00

Required Qty: 4.00

Comments: IPP rev:A 10.11.18 new issue DD verf:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
M6061T6B0.750X02.50 0	2.50 X 01.750	Purchased	No			100	f	0.0000	0.26333	1.108758			



6061-T6 Bar .750 x 2.50



11-18-10

17037

④

DART AEROSPACE LTD		Work Order: 63886
Description: SPACER		Part Number: D4281-1
Inspection Dwg: D4281-1, Rev: PA1		Page 1 of 1

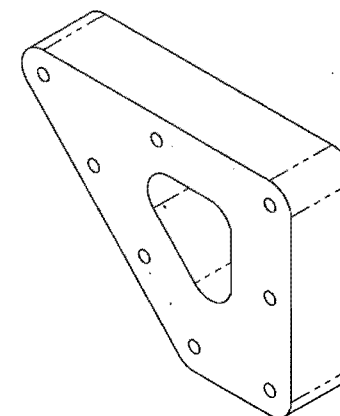
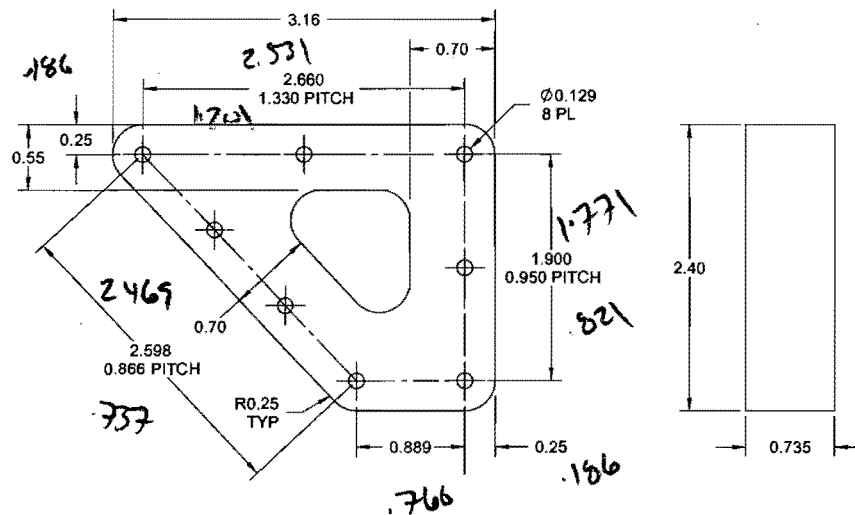
### FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☒ Prototype

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
Ø .129	+ .005 - .001				V B02	
3.16	± .030	3.157	X		V	
.70	± .030	.699	X		V	
2.660	± .010	2.657	X		V	
1.330	± .010	1.330	X		V	
1.900	± .010	1.898	X		V	
.950	± .010	.948	X		V	
.25	± .030	.250	X		V	
.889	± .010	.890	X		V	
.70	± .030	.707	X		V	
2.598	± .010	2.600	X		V	
.866	± .010	.868	X		V	
.25	± .030	.250	X		V	
.55	± .030	.525	X		V	
2.40	± .030	2.417	X		V	
<del>.735</del>	<del>± .010</del>	<del>.735</del>	<del>—</del>		<del>Vern M2-7</del>	
.735	± .010	.735	—		Vern M2-7	

Measured by: IB	Audited by: J	Prototype Approval: N/A
Date: 10-11-18	Date: 10/11/18	Date: —

Rev	Date	Change	Revised by	Approved
A		New Issue	KJ/JLM	



**D4281-1 SPACER**

**D4281-1 SPACER**

**NOTES:**

- 1) MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR  
PER QQ-A-225/8 OR AMS-QQ-A-225/8 (OR AMS 4117/4128/4115/4116)  
OR QQ-A-200/8 OR AMS-QQ-A-200/8 (OR AMS 4160)  
OR ASTM B211 OR ASTM B221  
REF DART SPEC M6061T6B
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
POWDER COAT WHITE (4.3.5.1) PER DART QSI 005 4.3
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: N/A
- 7) WEIGHT: 0.34 lbs

**PRELIMINARY ISSUE**  
Nov 17, 2010 fl.

PA1	PRELIMINARY	JPH	10.11.12
REV.	DESCRIPTION		BY DATE
DESIGN	JPH	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
DRAWN	JPH		
CHECKED	JPH	DRAWING NO. D4281	REV. PA1
MFG. APPR.	JPH	SHEET 1 OF 1	
APPROVED	JPH	TITLE	SCALE
DE APPR.	JPH	SPACER	NTS
DATE	10.11.12	<small>COPYRIGHT © 2010 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small>	

## Receiving Report

Date: 05/03/10  
 Supplier: Copper+Brass

Batch No: M17037  
 Dart P/O: 2007656

Packing Slip: Yes ☒ No ☐  
 Invoice: Yes ☐ No ☒  
 Receipt: Cash ☐ Cr. ☐

Release Note Attached: Yes ☒ No ☐ N/A ☐  
 Waybill Attached: Yes ☒ No ☐  
 Shipment Complete: Yes ☒ No ☐  
 Q.C. Inspection ll

**Discrepancies**

Part No.	Description	Quantity Ordered	Quantity Received	Quantity Returned	Quantity Short	Comments

TSR No. \_\_\_\_\_

Initials of receiver (if shipment OK) CL

Production/Admin. 050317  
 Date 27056  
 Received/Costing ll  
 Initial ll  
 \\NISO9000\Forms\Purchase\RECREPORT rev B

Accounting:  
 Date \_\_\_\_\_  
 AP/MR \_\_\_\_\_  
 Initial \_\_\_\_\_



# Purchase Order

PO Number 2007656  
Date 03-02-05  
Account # QSI012-6100

Vendor  
Copper and Brass Sales  
6905 Kenderry Gate, Unit 4  
Mississauga ONT  
CANADA L5T 2Y8

Sold To  
Dart Aerospace Ltd.  
1270 Aberdeen St.  
Hawkesbury ON  
Canada K6A 1K7

Ship To  
S A M E

Attn Richard  
Vendor Tel (800) 926-2600  
Vendor Fax (905) 696-8081

Purchaser  
Telephone (613) 632-3336  
Fax (613) 632-4443

**FAXED**  
03-02-05

Ship Via TRUCK GST # RT101272607 PST # 61225207 OE # 0000WIP  
FOB Point ORIGIN Comments: MATERIAL CERTIFICATION REQUIRED UPON DELIVERY  
Freight Chgs PrePay

Amt	Manuf	Mfg Part No	Our Part Number	Part Description	Delivery	Unit Price	Extended
12.00 ✓			M304R250	1/4" 304 SS Roundbar	03-10-05	3.3326 /f	39.99 ✓
		AISI 304/316 ROUND BAR					
48.00 ✓			M6061T6B0.250x06.000	6061-T6 Bar .25" x 6.0"	03-10-05	4.3570 /f	209.14 ✓
		6061-T6(OR 6061-T651/T6510/T6511/T62)BAR					
		PER AMS-QQ-A-225/8(ORAMS54117/4128/4115/4116)					
		PER AMS-QQ-A-200/8(OR AMS4160)					
24.00 ✓			M6061T6B0.500x02.000	6061-T6 Bar .50" x 2.0"	03-10-05	3.3747 /f	80.99 ✓
		AS ABOVE					
12.00 ✓			M6061T6B0.500x05.000	6061-T6 Bar .50" x 5.0"	03-10-05	8.0851 /f	97.02 ✓
		AS ABOVE					
12.00 ✓			M6061T6B0.625x01.500	6061-T6 Bar .625" x 1.5"	03-10-05	3.9139 /f	46.97 ✓
		AS ABOVE					
12.00 ✓			M6061T6B0.750x02.500	6061-T6 Bar .75" x 2.5"	03-10-05	6.4166 /f	77.00 ✓
		AS ABOVE					
48.00 ✓			M6061T6B1.500x01.250	6061-T6 Bar 1.5" x 1.25"	03-10-05	5.3582 /f	257.19 ✓
		AS ABOVE					
24.00 ✓			M6061T6B2.500x01.250	6061-T6 Bar 2.5" x 1.25"	03-10-05	9.0406 /f	216.97 ✓
		AS ABOVE					

2003/10

REMIT TO:

Copper and Brass Sales  
PO Box 2456 Station A  
Toronto, ON M5W 2K6

# Copper and Brass Sales Canada

A ThyssenKrupp Materials NA company



ThyssenKrupp

INVOICE

INVOICE NO: UT1466

RECEIVED MAR 15 2005

ACCOUNT NO	INVOICE DATE
96294	03/09/05

S  
O DART AEROSPACE  
L 1270 ABERDEEN ST  
D HAWKESBURY ON K6A 1K7  
CANADA  
T  
O

AMOUNT ENCLOSED

PLEASE DETACH AND RETURN THIS PORTION WITH YOUR REMITTANCE.

S 96294  
H  
I DART AEROSPACE  
P 1270 ABERDEEN ST  
T HAWKESBURY ON K6A 1K7  
O CANADA

# Copper and Brass Sales Canada

A ThyssenKrupp Materials NA company



ThyssenKrupp

SEND CORRESPONDENCE TO:

6905 KENDERRY GATE UNIT 4  
MISSISSAUGA ONTARIO  
CANADA L5T 2Y8  
Tel: (905) 696-8100  
Fax: (905) 696-8081

INVOICE DATE	PURCHASE ORDER			
03/09/05	2007656			
DESCRIPTION OF MATERIAL	BILLING QTY	UNIT	PRICE	EXTENSION
RECT 6061-T6511 EXTR ALUMINUM BAR 020167 3/4 (+/- .010) X 2-1/2 (+/-) UT1471 NO PROCESSING - 144" ML	12.00	LF	6.4166	77.00
RECT 6061-T6511 EXTR ALUMINUM BAR 020343 1-1/4 (+/- .012) X 1-1/2 (+/-) UT1472 -DART AEROSPACE	48.00	LF	5.3582	257.19
RECT 6061-T6511 EXTR ALUMINUM BAR 020359 1-1/4 (+/- .012) X 2-1/2 (+/-) UT1473 -DART AEROSPACE	24.00	LF	9.0405	216.97
RD 6061-T6511 EXTR ALUMINUM ROD 018517 3/4 (+/- .005) UT1475 NO PROCESSING - 144" ML	12.00	LF	3.3331	40.00
RD 6061-T6511 EXTR ALUMINUM ROD 018542 1 (+/- .005) UT1476 NO PROCESSING - 144" ML	24.00	LF	2.7885	66.92

INVOICE WILL BE DATED THE DAY OF SHIPMENT. INTEREST WILL BE  
CHARGED ON PAST DUE ACCOUNTS AT THE RATE OF 1-1/2% PER MONTH  
PRICE SHOWN IS SUBJECT TO PRICE IN EFFECT AT THE TIME OF SHIPMENT.

G.S.T. REG. NO. 14022393

TOTAL \$ CONTINUED

REMIT BY: 04/04/05

TERMS: NET 30 DAYS

CUSTOMER 96294		SHIP DATE 03/09/05 SHP		GRC GHT		QUOTE 30-133973-6		14 PACKING LIST	
BILL TO DART AEROSPACE				WORK ORDER **		ORDER DATE 03/02/05 ORD		TEST RESULTS	
SHIP TO DART AEROSPACE 1270 ABERDEEN ST HAWKESBURY ON CANADA K6A 1K7				01		DELIVERY DATE 03/10/05 DEL		SHIP BRANCH 30-TOR	
						SELL BRANCH 30-TOR		WORK ORDER UT1471	
CUSTOMER P.O. NUMBER 2007656				TERRITORY 01		ENTRY ID 30MAC		6905 KENDERRY GATE, MISSISSAUGA ONTARIO, CANADA L5T 2Y	
SHIPPER LINDA LACELLE				INSIDE SALES MARIO A. CARREIRO		CUSTOMER SIGNATURE		DATE	
SHIPPER TELEPHONE (513) 632-9577				INSIDE SALES TELEPHONE (905) 696-8100 223		QUANTITY		ORDERED	
SHIP VIA				SHIPPING STATUS		INVENTORY		26.46 LB	
MATERIAL				COMPLETE X		BILLING		12.00 LF	
TO CUSTOMER COMMON/PRT-TST				FOB DEST		WAREHOUSE		27.00	
BILL OF LADING				FREIGHT STATUS PPD		PACKED WITH OTHER GOODS UT1468		12.00	
						FINISHED GOODS LOCATION			

## Copper and Brass Sales Canada

A ThyssenKrupp Materials NA company



ThyssenKrupp

PART DESCRIPTION: 020167-3  
RECT 6061-T6511 EXTR ALUMINUM BAR, 3/4 (+/- .010) X 2-1/2 (+/- .024) X 12 FTML  
NO PROCESSING - 144" ML, Test Results Attn to: QA Department.

C 205/03/10

### SPECIAL INSTRUCTIONS

"Shipping, do not place any packages or goods on top of our material."

FILL		SCRAP		FILLED BY SC		PACKED BY		Q/A AUDIT	
CUSTOMER RECEIVING HOURS				MAX SKID WEIGHT		LOADING INSTRUCTIONS		MAXIMUM BUNDLE WEIGHT	
BOXES	BARNS	CASES	CUSH	PKGS	SKIDS	BOLS	TUBES	CTNS	FLAT
INSPECTION RECORD									

### TEST RESULTS

#### CERTIFICATE OF COMPLIANCE

We hereby certify that mercury or any of its compounds are not used in the processing and distribution of our products. The products we distribute are not hazardous in their received state. For MSDS sheets go to [www.copperandbrass.com/msds](http://www.copperandbrass.com/msds) or call 313-567-5282. We hereby certify that the material above complies with the following specifications:

ASTM-B221 AMS-QQ-A-200/8

TAG NO	QUANTITY UOM	VENDOR	VEND PO	HEAT/LOT	PCS	TAG NO	QUANTITY UOM	VENDOR	VEND PO	HEAT/LOT	PCS
978990 00	27.00 LB	ALCOA E	OCA2351	568946	1						

**ALCOA**

Alcoa Enginee... Products  
 Cressona, PA 17029  
 (570) 385-5000

**Alcoa Aluminum...Ask For it By Name**

CERTIFIED INSPECTION REPORT  
 AND TEST RESULTS  
 WROUGHT PRODUCTS

CODE NUMBER

ORDER NUMBER

00316203

IC 682298

COPPER & BRASS SALES  
 ATTN: ACCOUNTS PAYABLE  
 P.O. BOX 5116  
 SOUTHFIELD

MI 48086-5116

INVOICE NO.

INVOICE DATE

GROSS WEIGHT

B/L NO.

DATE SHIPPED

1072

158056

/ /

VIA

CUST PAYS GST  
 F.O.B.

DDU N

AUTHORIZED SIGNATURE(S)

*Christopher R. Owen*  
 CHRISTOPHER R. OWEN

09/16/04

QUALITY ASSURANCE DIRECTOR

We hereby certify that the material covered by this report has been inspected and tested accordance with the Seller's standard sampling plan or the requirements of any specific of the material described in this report and has been found to meet the applical requirements described herein, and that samples representative of the material met composition limits and had the mechanical properties shown. Also, note that Mercury is no normal contaminant in aluminum alloys. Neither Mercury nor any of its compounds are us in the manufacture of our extrusions.

Alcoa Engineered Products

MISSISSAUGA  
 CUSTOMER P.O. NO.  
 CA2351

IC L5T 2Y8  
 GOVT. CONTRACT NO.

Products as follows

ASTM B 221-02 QQ-A-200/8  
 AMS-QQ-A-200/8 ASME SB 221-99

MEETS T6 TEMPER REQUIREMENTS  
 MARKED

ORDER NUMBER

ALLOY AND TEMPER

682298

6061-T6511

ITEM	ITEM DESCRIPTION	PRODUCT CODE	QUANTITY SHIPPED	
			PCS., FT., ETC.	WGT. IN LBS. OR AS INDICATED
001	C/P 020167-3 RECTANGULAR BAR .750 X 2.500 AlcoaFAST SEC .750 2.500 .000 LEN 12' WFC ( W 2.205 F 03 C 2.60 )	L10005	40 PC 480.0 FT 2 BNDLS	1060

## MECHANICAL PROPERTIES

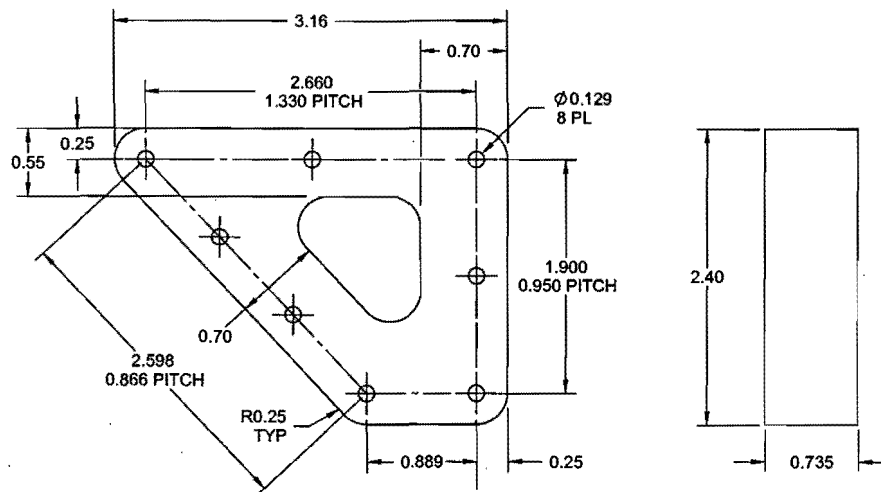
LOT NUMBER	RACK FROM/TO	** NUMBER OF TESTS	STRENGTH KSI*				CONDUCTIVITY		ELONG % IN 2" OR 4D	
			TENSILE		YIELD***					
			MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
668946-001	B /B	2	45.5	46.3	41.9	42.6			14.7	14.9

CHEMICAL COMPOSITION IN PERCENT MAXIMUM UNLESS SHOWN AS A RANGE

ALLOY SILICON IRON COPPER MANGANESE MAGNESIUM CHROMIUM ZINC TITANIUM  
 6061 0.40-0.8 0.7 0.15-0.40 0.15 0.8-1.2 0.04-0.35 0.25 0.15

OTH/EACH OTH/TOT ALUMINUM  
 0.05 0.15 REMAINDER

\* KIPS PER SQUARE INCH. ONE KIP EQUALS ONE THOUSAND POUNDS.  
 \*\* WHEN 2 OR MORE TESTS PER RACK ARE MADE, THE HIGHEST AND LOWEST VALUES ARE REPORTED.  
 \*\*\* YIELD STRENGTH IS DETERMINED BY THE 0.2% OFFSET METHOD.



**D4281-1 SPACER**

**D4281-1 SPACER**

**NOTES:**

- 1) MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR  
PER QQ-A-225/8 OR AMS-QQ-A-225/8 (OR AMS 4117/4128/4115/4116)  
OR QQ-A-200/8 OR AMS-QQ-A-200/8 (OR AMS 4160)  
OR ASTM B211 OR ASTM B221  
REF DART SPEC M6061T6B
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
POWDER COAT WHITE (4.3.5.1) PER DART QSI 005 4.3
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: N/A
- 7) WEIGHT: 0.34 lbs

A	NEW ISSUE	SC	10.11.25
REV.	DESCRIPTION	BY	DATE
DESIGN	JPH	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
DRAWN	JPH		
CHECKED		DRAWING NO.	REV. A
MFG. APPR.		D4281	SHEET 1 OF 1
APPROVED		TITLE	SCALE
DE APPR.		SPACER	NTS
DATE	10.11.25	COPYRIGHT © 2010 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	